



# Forest Health Protection Pacific Southwest Region



Date: September 16, 2011

File Code: 3420

To: Regional Forester, Region 5

Subject: *Xylella fastidiosa* confirmed on bigleaf maple in Northern California  
(FHP Report #NE11-16)

## Background

Maple leaf scorch (MLS) may have been first reported in California as a “blight” of bigleaf maple “from central Oregon to Yosemite National Park” in *Forest Pest Conditions in California-1964*. Since this first report, MLS was reported in many subsequent editions of the ‘California Conditions Report’ to be present throughout much of northern California. The reports attributed MLS to a combination of suspected causes such as desiccation, xylem-sucking insects, and/or bacteria spread by those insects.

In 1998, MLS was obvious along Indian Creek, Feather River and Yuba Rivers in Plumas and Sierra Counties. A symptomatic bigleaf maple leaf from these areas is shown in Figure 1. From 1998 to 2008, the MLS in these drainages was informally monitored and MLS continued to reoccur, suggesting that the cause was biotic and not weather-caused, as reported in 1998. Although no data was recorded from the observations, MLS appears to have intensified over the decade as the affected trees continued to decline (figure 2) and in some cases had experienced up to 100% crown dieback (Figure 3). Typical symptoms included browning of the leaf margins, drastically reduced leaf size and branch and stem dieback.



Figure 1. MLS leaf in 1998.



Fig 2. 2008 declining bigleaf maple.

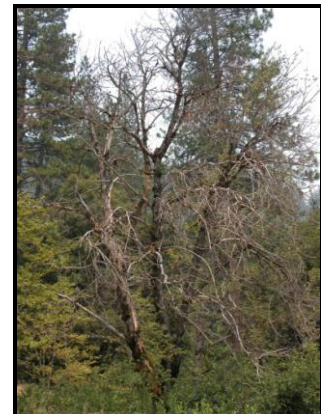


Fig 3. 2008 dying maple

In July 2008, Bill Woodruff, FHP Plant Pathologist, collected a combined sample of leaves and branches from bigleaf maple trees along Highways 49 and 89 in Sierra and Plumas Counties,

respectively. The sample was sent to Dr. Ann Brooks Gould and the Plant Diagnostic Lab at Rutgers University in Milltown, New Jersey for analysis. An ELISA test for *Xylella fastidiosa*, the cause of bacterial leaf scorch (BLS), was run and found positive.

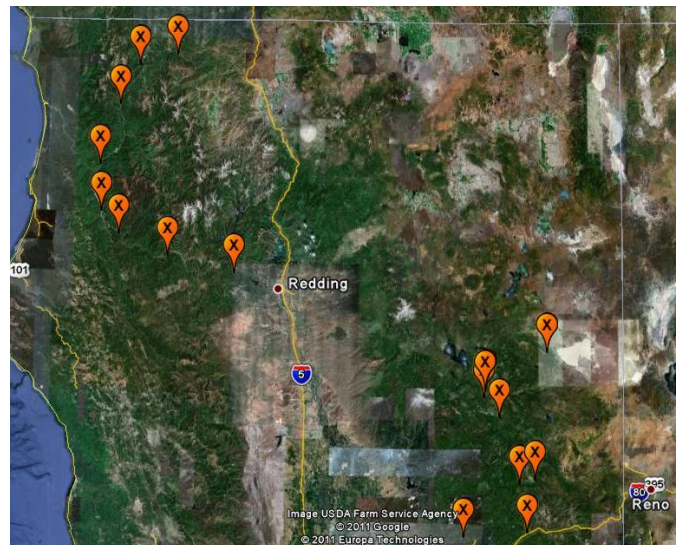
#### What is Bacterial Leaf Scorch (*Xylella fastidiosa*)?

BLS is an infectious chronic disease caused by the fastidious, gram-negative, xylem-limited bacterium *X. fastidiosa*. This bacterium, which is transmitted by xylem-feeding insects, colonizes and physically "clogs" the tree's water conducting (xylem) tissues. Water transport becomes disrupted in roots, branches, and leaves due to large amounts of multiplying bacteria and their by-products. The presence of the bacteria also triggers a reaction in the tree that plugs the xylem, further impeding water transport and eventually killing the tree.

BLS is not new but is appearing more frequently in landscape trees. It has been found in coastal US states from New York to Texas, in Washington, DC, as well as in California, Indiana, Kentucky, Nebraska and Ohio. This surge may simply be because more people recognize the symptoms. *X. fastidiosa* causes oleander leaf scorch and Pierce's disease of grapevine in California.

#### Where in California is *X. fastidiosa*?

In August 2009, bigleaf maple branch and leaf samples were collected from 20 trees in 19 locations in northern California including the locations sampled in 2008. The samples were analyzed at the Rutgers Lab in September 2009 using a real-time PCR analysis using primers and probes (TaqMan) specific for *X. fastidiosa*. All but one of the trees and locations tested positive for the bacteria. A map showing the locations where *X. fastidiosa* was confirmed on bigleaf maple is shown on the map to the right.



#### More study needed.

Whether MLS on bigleaf maple in northern California is the same as BLS elsewhere in California or the US needs to be determined. Some evidence suggests that, in some cases, MLS results solely from heavy feeding by leaf hoppers and not from lethal bacterium transported by these insects. More study is needed.

s/ *Bill Woodruff*

William Woodruff  
Plant Pathologist  
NE CA Shared Services Area